SOLAR ENVIRONMENTAL PROTOCOLS

PHASE I ENVIRONMENTAL SITE ASSESSMENT WITH SUBSURFACE SOIL AND GROUNDWATER SAMPLING

1.0 INTRODUCTION AND SCOPE OF WORK

Prior to construction and commencement of operations of the Solar Photovoltaic Facility, the Applicant shall conduct a Phase I Environmental Site Assessment (Phase I ESA) and a Subsurface Soil and Groundwater Assessment (SSA) to establish an environmental baseline for soil and groundwater quality at the subject property. Subsequently, each year after commencement of operations, a groundwater monitoring and sampling event will be conducted and, every five (5) years after commencement of operations and at the time of decommissioning of the facility, the Applicant shall conduct an SSA to evaluate potential changes in soil and groundwater quality as a result of ongoing operation of the facility.

2.0 DEFINITIONS

2.1 Phase I ESA

The Phase I ESA shall be conducted utilizing industry standards and guidelines for conducting Environmental Site Assessments established by the American Society for Testing and Materials (ASTM), in general accordance with ASTM's Standard Practice for Environmental Site Assessments E 1527-13 (ASTM November 2013) and the All Appropriate Inquiry requirements specified in 40 CFR Part 312.20 and is intended to identify the presence of recognized environmental conditions at the Subject Property.

Recognized environmental conditions are defined as "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release or a material threat of a release of hazardous substances or petroleum products in structures on the property or into the ground, groundwater, or surface water of the property."

2.2 Subsurface Soil and Groundwater Assessment (SSA)

The SSA with subsurface sampling of site soils and groundwater shall be conducted in accordance with regulations as stated in Massachusetts General Laws (MGL) c. 21E and specifically regulations of the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000 and associated guidance and best management practices.

3.0 ENVIRONMENTAL PROFESSIONALS

The Phase I ESA shall be conducted under the direction and supervision of an Environmental Professional as defined in ASTM # 1527-13. The Environmental Professional shall possess sufficient specific education, training, and relevant experience necessary to exercise professional judgement to develop opinions and conclusions regarding conditions indicative of releases or threatened releases on, at, in, or to a property.

The Subsurface Soil and Groundwater Assessment or SSA, shall be conducted under the direction and supervision of a Massachusetts Licensed Site Professional (LSP), or hazardous waste site cleanup

professional, as defined in MGL c. 21A§19A, who will render professional judgement, opinions and conclusions regarding releases or threats of releases to site soils and groundwater as compared to promulgated standards for oil and hazardous materials as listed in the MCP at 310 CMR 40.0000.

4.0 TIMING OF THE WORK

The Phase I ESA and SSA shall be completed and report submitted to the Town of Warren prior to commencement of operations of the solar facility. At the anniversary date of each 5-year period of operation of the solar facility and at termination of operations of the solar facility, an SSA will be completed PRIOR to the anniversary or termination date.

A groundwater monitoring and sampling event will be conducted annually for the duration for the operation of the solar facility.

The SSA at termination of operations of the facility shall be completed PRIOR to commencement of decommissioning and removal of any photovoltaic equipment (panels, racking systems, conduit, etc) from the Site and any earthwork. No rutting or land disturbance shall take place until the SSA has been completed and final report submitted to the Town of Warren. Approval must be granted by the Town before proceeding with decommissioning.

5.0 SUBSURFACE SOIL AND GROUNDWATER SAMPLING

In performance of the SSA, the Applicant will conduct subsurface soil and groundwater sampling to evaluate the potential presence of a hazardous materials release as a result of Applicant's operation of the site as a solar photovoltaic facility.

For the purposes of this Section 5.0, a solar voltaic facility is considered to be an area of land containing solar voltaic panels, all supporting equipment, access roads, constructed retention basins, associated water outlets, and other drainage control systems.

Prior to conducting soil and groundwater sampling, Applicant shall submit a Site Plan to the Town indicating all soil and groundwater sampling locations. The Site Plan and sampling locations must be approved by the Town prior to collection of samples.

5.1 Soil Sampling Procedures

Soil sampling shall be conducted beneath the footprint of the solar array, surface and subsurface equipment, utilities, equipment staging areas, battery storage containers (if present), and from all retention basins constructed on the property. A minimum of five (5) grab soil samples will be collected per acre or part acre on a grid basis beneath the solar array for laboratory analysis. Care should be taken to collect samples beneath the lower drip-edge of the panels and beneath damaged or fractured panels. Additional grab samples will be collected from beneath surface and subsurface equipment and retention basins as described above. All samples will be collected using hand auger equipment to a depth of 6-12 inches. Screening of all soil samples will be conducted using a portable Photoionization Detector (PID) and Massachusetts Department of Environmental Protection (DEP) methodology. The locations of all samples collected shall be incorporated into a site plan and included in the final report of the SSA.

5.2 Soil Analytical Methods

All soil samples shall be transported on ice under Chain of Custody documentation to a Massachusetts-certified laboratory for the following analyses:

1) US EPA Priority Pollutant Metals 13 6010/7470/7471
2) US EPA Method 6010 for Silicon
3) US EPA Method 8260C-D for Volatile Organic Compounds
4) US EPA Method SW 846 8015C for Total Petroleum Hydrocarbons fingerprint

All analytical results shall be tabulated and incorporated as part of the final report. Comparison of analytical results with applicable MCP soil standards will be included.

5.3 Groundwater Sampling Procedures

In performance of the SSA, the Applicant shall install a minimum of six (6) groundwater monitoring wells per 25-acre, or part acre, area of the facility. A minimum of six (6) soil borings will be advanced to beneath the groundwater table and two-inch diameter PVC slotted casings will be constructed within the borings using standard industry materials and practices for installation and completion of groundwater monitoring wells. All groundwater monitoring wells will be completed with standard road boxes.

A minimum of four (4) groundwater monitoring wells shall be located along the property line adjacent to any retention basins in an inferred downgradient direction of groundwater flow from the areas of solar panel installations. Two (2) groundwater monitoring wells shall be located in an upgradient location of inferred groundwater flow. Depths to groundwater shall be measured and the direction of groundwater flow determined.

For each SSA, one groundwater sample shall be collected from each monitoring well using standard industry practices and methodology. The locations of the monitoring wells and direction of groundwater flow shall be incorporated into a site plan and included in the final report of the SSA.

Between each 5-year SSA assessment on an annual basis, groundwater sampling, laboratory analysis, depth to groundwater monitoring, flow direction, and reporting will be conducted by the Applicant for each groundwater monitoring well installed. Laboratory analyses shall be as provided in Section 5.4.

5.4 Groundwater Analytical Methods

Groundwater samples shall be transported on ice under Chain of Custody documentation to a Massachusetts-certified laboratory for the following analyses:

1) US EPA Priority Pollutant Metals 13 6010/7470/7471
2) US EPA Method 6010 for Silicon
3) US EPA Method 8260C-D for Volatile Organic Compounds
4) US EPA Method SW 846 8015C for Total Petroleum Hydrocarbons fingerprint

All analytical results will be tabulated and incorporated as part of the final report. Comparison of analytical results with applicable MCP groundwater standards will be included.

6.0 FINAL REPORTING, CONCLUSIONS AND RECOMMENDATIONS

Fifteen (15) copies of the initial Phase I ESA and SSA Final Report shall be submitted to the Town of Warren 30 days prior to commencement of operations of the facility. Subsequent annual groundwater monitoring reports shall be submitted within 30 days of each 1-yearly anniversary. SSA Final Reports shall be submitted to the Town of Warren within 30 days of each 5-year anniversary of operations and within 30 days of cessation of operations of the facility. All Final Reports shall fully describe the objectives, methodology, field observations, field procedures, soil and groundwater analytical results, and conclusions of all work completed. Attached exhibits shall include but not be limited to a Site plan, soil sampling location plan, groundwater monitoring well location plan with direction of groundwater flow and groundwater contours, tabulated analytical results and comparison to applicable MCP standards, copies of laboratory analytical reports, and all related information as required under the MCP at 310 CMR 40.0000.

The Environmental Professional shall render an opinion as to the presence or likely presence of recognized environmental conditions at the property and recommend additional investigation as appropriate based on the results of the Phase I ESA. The LSP shall render an opinion and recommend additional investigation as appropriate based on all results of the Subsurface Soil and Groundwater Assessments in accordance with regulations of the Massachusetts Contingency Plan.